

## **REMARKS/ARGUMENTS**

### **Rejections to Claims 1, 13 and 25 under 35 USC § 103**

In the Final Office Action, Examiner is of the opinion that many aspects of claims 1, 13 and 25 are disclosed by the prior art He et al (Machine Learning Methods for Chinese Web Page Categorization) in view of U.S. Patent No. 5,297,039 to Kanaegami et al. Hence, Examiner is of the opinion that claims 1 to 6, 8 to 10, 13 to 18, 20 to 22, 25 to 32 and 34 to 36 are obvious.

### **Response to Rejections of Claims 1, 13 and 25 under 35 USC § 103**

Applicant respectfully submits that claims 1, 13 and 25 are not obvious over He in view of Kanaegami. Specifically, claims 1, 13 and 25 recite apparatus and methods for discovering knowledge from text documents comprising the aspects of extracting semi-structured meta-data from text documents, identifying key identities and key relations from the semi-structured meta-data, deriving from a domain knowledge base a plurality of attributes, formulating a plurality of patterns, analyzing the plurality of patterns using an associative discoverer and interpreting the output of the associative discoverer for discovering knowledge.

He discloses a method for text categorization for Chinese information by application of three known statistical machine-learning methods to Chinese web page categorization. The three statistical machine-learning methods are namely  $k$  Nearest Neighbor system ( $k$ NN), Support Vector Machines (SVM) and Adaptive Resonance Associative Map (ARAM). He investigates the capabilities of these methods in learning categorization knowledge from real-life web documents. In addition, He further investigates whether the incorporation of domain knowledge derived from the category description can enhance ARAM's predictive performance.

Kanaegami discloses a text information extraction system that extracts analysis networks from texts and stores them in a database. The analysis networks consist of lines each including elements and relations extracted from the texts. Further, the analysis networks are complemented via synonym/near synonym/thesaurus process and via complementary template and the lines thereof are weighted via concept template. A text similarity matching device judges similarity of input and database analysis networks on the basis of agreements of words, word pairs, and lines. A text search system stores texts and complementary term lists prepared therefrom in respective databases. Queries are provided to analysis networks from which sets of keywords and relations are extracted. After searching the texts and complementary term lists

stored in databases with respect to the keywords extracted from each input query, agreements of the sets of keywords and relations are determined.

Applicant respectfully reiterates that the inventions of claims 1, 13 and 25 comprise steps of using a domain knowledge base to convert each of the key entities into a plurality of attributes. Although Examiner is of the opinion this feature has been disclosed in Page 93, Right Column, Paragraph 1 and Page 96, Left Column, Paragraph 1 of He, Applicant respectfully submits that He does not disclose the use of any such knowledge base. Instead, He merely discloses a domain knowledge that relates to linking keywords to classes and clearly does not convert the keywords into a plurality of attributes as recited in each of amended claims 1, 13 and 25. In addition, Kanaegami also does not disclose the use of a domain knowledge base that converts each of the key entities into a plurality of attributes as recited in each of amended claims 1, 13 and 25.

Hence, Applicant respectfully submits that in accordance to the above response explaining that the inventions of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, a person having ordinary skills in the art when combining He and Kanaegami would not be able to arrive at the method and system for discovering knowledge from text documents of claims 1, 13 and 25. Therefore, claims 1, 13 and 25 are submitted to be allowable.

Furthermore, He relates to a method for categorization of Chinese text while Kanaegami relates to a text search system. Unlike English and other Indo-European languages, Chinese text does not have a natural delimiter between words. This presents the problem of word segmentation when performing Chinese documents processing. He addresses this problem by using rules-based statistical learning machines. Kanaegami does not specifically mention that the disclosed text search system is able to perform Chinese documents processing. Accordingly, Applicant respectfully submits that each of He and Kanaegami teaches an unrelated solution that precludes each other. It would not be obvious for a person having ordinary skills in the art to combine He and Kanaegami to arrive at the method and system for discovering knowledge from text documents of claims 1, 13 and 25. Therefore, claims 1, 13 and 25 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 1, 13 and 25 are respectfully requested.

**Rejections of Claims 2, 14 and 28 under 35 USC § 103**

Examiner is of the opinion that He discloses claims 2, 14 and 28. In particular, Examiner is of the opinion that He teaches the step of extracting text context from documents, which contain at least one type of text, image, audio and video information. Hence, Examiner is of the opinion that claims 2, 14 and 28 are obvious.

**Response to Rejections of Claims 2, 14 and 28 under 35 USC § 103**

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention.

Claims 2, 14 and 28 describe steps and means for extracting text content from documents containing at least one type of text, image, audio and video information, which involve an improvement to the claimed invention as defined by claim 1, 13 and 25. Without the availability of the method and system of claims 1, 13 and 25, a person skilled in the art at the time of invention would not have the knowledge of the method and system of claims 1, 13 and 25 to improve upon to arrive at each of claims 2, 14 and 28 for extracting text content from documents containing at least one type of text, image, audio and video information. Therefore, claims 2, 14 and 28 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 2, 14 and 28 are respectfully requested.

**Rejections of Claims 3, 15 and 29 under 35 USC § 103**

Examiner is of the opinion that Kanaegami discloses claims 3, 15 and 29. Specifically, Examiner is of the opinion that the “identifying” as claimed by Applicant is anticipated by Kanaegami. In addition, Examiner is further of the opinion that “selecting” as claimed by Applicant is anticipated by keyword extracting as taught in Kanaegami. Hence, Examiner is of the opinion that claims 3, 15 and 29 are obvious.

**Response to Rejections of Claim 3, 15 and 29 under 35 USC § 103**

Claims 3, 15 and 29 recite steps and means for selecting the plurality of key entities according to at least one of frequency of appearance of the plurality of key entities in the semi-structure meta-data. Key entities are entities obtained from extracting semi-structured meta data from free-text documents that are stored in a meta-data store on a permanent or temporary basis as described in lines 20 to 30 of page 6 of the present application.

Applicant submits that each of claims 3, 15 and 29 needs to be read in totality when interpreting the claimed invention and not be based on a single keyword. More specifically, Kanaegami merely teaches means for searching among complementary term lists generated using search means or list generating means.

In addition, Applicant also respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 3, 15 and 29. Therefore, claims 3, 15 and 29 are submitted to be non-obvious.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 3, 15 and 29 are respectfully requested.

**Rejections of Claims 4, 16 and 30 under 35 USC § 103**

Examiner is of the opinion that Kanaegami discloses claims 4, 16 and 30. Specifically, Examiner is of the opinion that the “identifying” as claimed by Applicant is anticipated by Kanaegami. In addition, Examiner is further of the opinion that “selecting” as claimed by Applicant is anticipated by keyword extracting as taught in Kanaegami. Hence, Examiner is of the opinion that claims 4, 16 and 30 are obvious.

**Response to Rejections of Claims 4, 16 and 30 under 35 USC § 103**

Claims 4, 16 and 30 recite steps and means for selecting the plurality of key relations according to at least one of frequency of appearance of the plurality of key relations in the semi-structure meta-data.

Applicant submits that each of claims 4, 16 and 30 needs to be read in totality when interpreting the claimed invention and not be based on a single keyword. Kanaegami merely

teaches means for searching among complementary term lists generated using search means or list generating means.

Further, Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 4, 16 and 30. Therefore, claims 4, 16 and 30 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 4, 16 and 30 are respectfully requested.

**Rejections of Claims 5, 17 and 31 under 35 USC § 103**

Examiner is of the opinion that He discloses claims 5, 17 and 31. Specifically, Examiner is of the opinion that a lexicon disclosed in He anticipates the Applicant's claimed taxonomy. Hence, Examiner is of the opinion that claims 5, 17 and 31 are obvious.

**Response of Claims 5, 17 and 31 under 35 USC § 103**

Claims 5, 17 and 31 recite steps and means for deriving from a domain knowledge base relating to at least one of taxonomy, a concept hierarchy network, ontology, a thesaurus, a relational database, and an object-oriented database.

Applicant submits that when interpreting each of claims 5, 17 and 31, they should be read in totality and not be determined solely based on use of a particular word. Although Applicant agrees that lexicon is similar to the claimed taxonomy, claims 5, 17 and 31 relate to derivation from a domain knowledge base of various source types, of which only one of the various source types is related to taxonomy.

Additionally, Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 5, 17 and 31. Therefore, claims 5, 17 and 31 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 5, 17 and 31 are respectfully requested.

**Rejections of Claims 6, 18 and 32 under 35 USC § 103**

Examiner is of the opinion that Kanaegami discloses claims 6, 18 and 32. In particular, Examiner is of the opinion that parts of speech identified in the analysis networks during syntactical analysis, are attributes and/or lower level entities that characterize the analysis networks as taught in Kanaegami. Hence, Examiner is of the opinion that claims 6, 18 and 32 are obvious.

**Response to Rejections of Claims 6, 18 and 32 under 35 USC § 103**

Claims 6, 18 and 32 recite steps and means for deriving a set of attributes or lower level entities characterizing the plurality of entities relating to the plurality of key entities. The set of attributes or lower level entities is exemplarily described in lines 20 to 30 of page 12 and lines 1 to 10 of page 13 of the present application as a sub-concept obtained from the domain knowledge base.

Applicant respectfully submits that the claim limitation “characterizing the plurality of entities relating to the plurality of key entities” is included in each of claims 6 and 18 and claim 32. Kanaegami makes no particular mention that the selection of verbs positioned after respective nouns is specifically for characterizing the plurality of entities relating to the plurality of key entities as described in each of claims 6 and 18 and claim 32 of the present application.

Further, Applicant also respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 6, 18 and 32. Therefore, claims 6 and 18 and claim 32 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 6, 18 and 32 are respectfully requested.

**Rejections of Claims 8, 20 and 34 under 35 USC § 103**

Examiner is of the opinion that He discloses claims 8, 20 and 34. Hence, Examiner is of the opinion that claims 8, 20 and 34 are obvious.

**Response to Rejections of Claims 8, 20 and 34 under 35 USC § 103**

Claims 8, 20 and 34 recite steps and means of using the associative discoverer comprising, analyzing the plurality of patterns using at least one of a neural network, a statistical system and a symbolic machine learning system.

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 8, 20 and 34. Therefore, claims 8, 20 and 34 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 8, 20 and 34 are respectfully requested.

**Rejections of Claims 9, 21 and 35 under 35 USC § 103**

Examiner is of the opinion that He discloses claims 9, 21 and 35. In particular, Examiner is of the opinion that He teaches the use of Adaptive resonance Associative Map (ARAM) for analyzing patterns. Hence, Examiner is of the opinion that claims 9, 21 and 35 are obvious.

**Response to Rejections of Claims 9, 21 and 35 under 35 USC § 103**

Claims 9, 21 and 35 recite steps and means for analyzing the plurality of patterns using an Adaptive Resonance Associative Map.

Applicant submits that claims 9, 21 and 35 have to be read in totality together with the preceding claims they are dependent on, which are claims 8, 20 and 34.

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1, 13 and 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of claims 9, 21 and 35. Therefore, claims 9, 21 and 35 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 9, 21 and 35 are respectfully requested.

**Rejections of Claims 10 and 22 under 35 USC § 103**

Examiner is of the opinion that He discloses claims 10 and 22. Specifically, Examiner is of the opinion that discovering of the relations is inherent in the process of category recognition amongst patterns and is taught in He. Hence, Examiner is of the opinion that claims 10 and 22 are obvious.

**Response to Rejections of Claims 10 and 22 under 35 USC § 103**

Amended claims 10 and 22 recite a step and a means for interpreting the output of the associative discoverer for discovering knowledge comprising, discovering the semantic relations between the plurality of attributes and the plurality of key entities.

Applicant agrees that He teaches learning categories consisting of “learning relations” between input and output patterns but is silent on discovering the semantic relations between the plurality of attributes and the plurality of key entities.

Additionally, Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1 and 13 are not disclosed independently or collectively by He and Kanaegami, the method and system of claims 1 and 13 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at each of amended claims 10 and 22. Therefore, amended claims 10 and 22 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 10 and 22 are respectfully requested.

**Rejection of Claim 26 under 35 USC § 103**

Examiner is of the opinion that He discloses claim 26. Specifically, Examiner is of the opinion that the “words” taught in He are equivalent to the key entities in Applicant’s claimed invention. In addition, Examiner is of the opinion that by disclosing “words” being in “classes”, He anticipates the “relations among the entities” of Applicant’s claimed invention. Hence, Examiner is of the opinion that claim 26 are obvious.

**Response to Rejection of Claim 26 under 35 USC § 103**

Amended claim 26 recites the semi-structured meta-data comprising definition of entities and semantic relations among the entities.



Applicant agrees with Examiner that the 'words' taught in He are similar to the key entities in Applicant's claimed invention. However, Applicant respectfully submits that the He disclosure of "words" being in "classes" is not equivalent to the "relations among the entities" of Applicant claimed invention. Specifically, the relations as recited in amended claim 26 refer to semantic relations relating to "words" that can be extracted from text documents without the use of "classes".

Applicant respectfully submits that in accordance to the above response explaining that the system for discovering knowledge from text documents of amended claim 26 is not disclosed independently or collectively by He and Kanaegami, the system of amended claim 26 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at amended claim 26. Therefore, amended claim 26 is submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claim 26 is respectfully requested.

**Rejection of Claim 27 under 35 USC § 103**

Examiner is of the opinion that He discloses claim 27. Specifically, Examiner is of the opinion that when He teaches that the lexicon "contains" words, it is inherent that the words are stored in the lexicon and that the lexicon is stored in some form that can be accessed by segmentation model. Hence, Examiner is of the opinion that claim 27 are obvious.

**Response to Rejection of Claim 27 under 35 USC § 103**

Amended Claim 27 recites the semi-structured meta-data being stored in at least one of permanent and temporary storage.

Applicant submits that Examiner is applying hindsight in stating that lexicon disclosed by He has to be stored in some form since He makes no specific mention that the lexicon is stored in at least a permanent and temporary storage according to amended claim 27. Hence, Applicant respectfully submits that Examiner is objecting to claim 27 by making inferences based on the teachings in He that are not found in amended claim 27.

Applicant also respectfully submits that in accordance to the above response explaining that the system for discovering knowledge from text documents of claim 25 is not disclosed independently or collectively by He and Kanaegami, the system of claim 25 would not have been

available to a person skilled in the art at the time of invention to improve upon to arrive at amended claim 27. Therefore, amended claim 27 is submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claim 27 is respectfully requested.

**Rejection of Claim 36 under 35 USC § 103**

Examiner is of the opinion that He discloses claim 36. More specifically, Examiner is of the opinion that the “words” taught in He are equivalent to the key entities in Applicant’s claimed invention. In addition, Examiner is of the opinion that by disclosing “words” being in “classes”, He anticipates the “relations among the entities” of Applicant’s claimed invention. Furthermore, Examiner is of the opinion that in broadly teaching relation between entities, He anticipates the specific claiming of “hidden relations”. Hence, Examiner is of the opinion that claim 36 are obvious.

**Response to Rejection of Claim 36 under 35 USC § 103**

Amended claim 36 recites the knowledge comprising implicit hidden key relations between the attributes of the entities and the key entities. The hidden key relations are relations pertaining to connecting the key entities’ with other entities or their attributes, which are not explicitly stated in text or domain knowledge base. Applicant submits that He makes no specific mention of implicit hidden key relations between the attributes of the entities and the key entities according to amended claim 36.

Applicant respectfully submits that in accordance to the above response explaining that the system for discovering knowledge from text documents of claim 25 is not disclosed independently or collectively by He and Kanaegami, the system of claim 25 would not have been available to a person skilled in the art at the time of invention to improve upon to arrive at amended claim 36. Therefore, amended claim 36 is submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claim 36 is respectfully requested.

**Rejections of Claims 7, 19 and 33 under 35 USC § 103**

Examiner is of the opinion that He in combination with Kanaegami discloses claims 7, 19 and 33 but does not teach the use of “concatenated vector representation of the plurality of attributes”. However, Examiner is of the opinion that Tan et al (Predictive Self-Organizing

Networks for Text Categorization) (Tan1) anticipates Applicant's claimed "concatenated vector representation". Therefore it would be obvious to combine He, Kanaegami and Tan1 to arrive at claims 7, 19 and 33. Hence, Examiner is of the opinion that claims 7, 19 and 33 are obvious.

**Response to Rejections of Claims 7, 19 and 33 under 35 USC § 103**

Claims 7, 19 and 33 describe steps and means for formulating concatenated vector representations of the plurality of attributes and the plurality of key entities relating to the corresponding plurality of key relations.

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, hence the combination of He, Kanaegami together with Tan would not then enable a person skilled in the art to make use of the undisclosed method and system of claims 1, 13 and 25 at the time of invention to improve upon to arrive at each of claims 7, 19 and 33. Therefore, claims 7, 19 and 33 are submitted to be non-obvious.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 7, 19 and 33 are respectfully requested.

**Rejections to Claims 11, 12, 23, 24, 37 and 38 under 35 USC § 103**

Examiner is of the opinion that He in combination with Kanaegami and Tan et al (Learning User Profiles for Personalized Information Dissemination) (Tan2) discloses claims 11, 12, 23, 24, 37 and 38. Specifically, Examiner is of the opinion that Tan2 anticipates the "user interface for displaying" and hence the combination of He with Kanaegami and Tan2 enables claims 11, 23 and 37 to be derived. Yet specifically, Examiner is of the opinion that Tan2 anticipates applicant's claimed "user interface for obtaining user instruction". Therefore the combination of He with Kanaegami and Tan2 would enable a person skilled in the art to arrive at claims 12, 24 and 38. Hence, Examiner is of the opinion that claims 11, 12, 23, 24, 37 and 38 are obvious.

**Response to Rejections of Claims 11, 23 and 37 under 35 USC § 103**

Claims 11, 23 and 37 describe steps and means in which a user interface is used for displaying the semi-structured meta-data, the plurality of key entities, the plurality of key relations, the plurality of attributes and the knowledge discovered.

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, hence the combination of He, Kanaegami together with Tan2 would not then enable a person skilled in the art to make use of the undisclosed method and system of claims 1, 13 and 25 at the time of invention to improve upon to arrive at each of claims 11, 23 and 37. Therefore, claims 11, 23 and 37 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 11, 23 and 37 are respectfully requested.

**Response to Rejections of Claims 12, 24 and 38 under 35 USC § 103**

Claims 12, 24 and 38 describe steps and means in which a user interface is used for obtaining user instruction for the plurality of key entities and the plurality of key relations.

Applicant respectfully submits that in accordance to the above response explaining that the method and system for discovering knowledge from text documents of claims 1, 13 and 25 are not disclosed independently or collectively by He and Kanaegami, hence the combination of He, Kanaegami together with Tan2 would not then enable a person skilled in the art to make use of the undisclosed method and system of claims 1, 13 and 25 at the time of invention to improve upon to arrive at each of claims 12, 24 and 38. Therefore, claims 12, 24 and 38 are submitted to be allowable.

Therefore in accordance with the above response, reconsideration and withdrawal of the obviousness rejection of claims 12, 24 and 38 are respectfully requested.

**CONCLUSION**

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. In the event that an extension of time is necessary to allow for consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Conley Rose P.C.'s Deposit Account No. 03-2769 for such fees.

Respectfully submitted,

/Jonathan M. Harris/

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